The spill effect

PHOTO: AFP

A TV cameraman takes images of a dead dolphin at Carnota beach in northeastern Spain on December 21 killed by an oil spill from the tanker ship, Prestige sunken a month ago.

Global warming in US perspective

BILLY I AHMED

IN 1992 the United States and the nations from around the world met at the United Nations Summit in Rio and agreed to voluntarily reduce greenhouse gas emissions to 1990 levels by the year 2000. However, the reduction of greenhouse was not legally mandatory as this would cause enormous economic loss as mainly seen by the US and this led many other nations to join the bandwagon of the US.

In December 1997 representative from around the world met again in Kyoto to sign a revised agreement. This time around negotiators of the Clinton administration agreed to legally binding, internationally enforceable limits on emission of greenhouse gases as a key tenet of the treaty.

Clinton's view was based on the idea that global warming is real and that it is caused by human activities. Further, it presupposes that the potential damage caused by global warming would greatly outweigh the damage caused to the economy by severely restricting energy use. **Is global warming occurring?**

According to Accu-Weather, the world's leading commercial forecaster, "Global air temperatures as measured by hand-based weather stations show an increase of about 0.45 degrees Celsius over the past century. This may be no more than normal climatic variation…[and] several biases in the data may be responsible for some of this increase."

Satellite data indicate a slight cooling in the climate in the last 18 years. These satellites use advance technology and are not subject to "heat island" effect around major cities, which alters ground-based thermometers.

Projections of future climate changes are uncertain. Although some computer models predict warming in the next century, these models are very limited. The effects of cloud formations, precipitation, the role of the oceans, or the sun, are still not well known and often inadequately represented in the climate models - although all play a major role in determining our climate. Interestingly, as the computer climate models have become more sophisticated in recent years, the predicted increase in temperature has been lowered.

Are humans causing the climate to change?

Ninety-eight per cent of total global greenhouse gas emissions are mostly water vapour; only two per cent are from manmade sources.

By most accounts, manmade emissions have had no more than a minuscule impact on the climate. Although the climate has warmed slightly in the last 100 years 70 per cent of that warming occurred prior to 1940, before the upsurge in greenhouse gas emissions from industrial processes, says Dr Robert C Balling of the Arizona State University.

A Gallup survey indicated that only 17 per cent of the members of the American Meteorological Society and the American Geophysical Society thought the warming of the 20th century was a result of an increase in greenhouse gas emissions.

If global warming occurs, will it be harmful?

The idea that global warming would melt the ice caps and flood coastal cities seems to be mere science fiction. A slight increase in temperature - whether natural or mankind induced - is not likely to lead to a massive melting of earth icecaps. Also, sea-level rises over the centuries relate more to warmer and thus expanding oceans, not to melting ice caps.

Large quantities of carbon dioxide in the atmosphere and warmer climates would lead to an increase in vegetation. During warm periods in history vegetation flourished, at one point allowing the Vikings to farm in now frozen Greenland.

What are the policy proposals?

The US agreed to a 70 per cent reduction of carbon dioxide emissions from what they were in 1990, a target to be met by 2008-12. This agreement would result in massive restriction on energy use and large taxpayer-funded subsidies for new technologies.

What economic impact will the proposal have?

According to a report by the Department of Energy, stringent targets to reduce fossil-fuel emissions in the US will cause energy-intensive industries, including steel, iron, chemical, rubber, taking with them hundreds of thousands of jobs.

Carbon taxes will cause relatively large income losses in the poorest one-fifth of the population. The poor, because they spend a greater proportion of their income on necessities, would have few ways to cut back to compensate for higher living costs.

Stabilising emissions at 1990 level by 2010 would reduce the growth of US per capita income by five per cent every year, says Gary W Yohe of the Wesleyan University.

The burden would fall on many individuals and family and would be unfair in that it would be quite unrelated to income, wealth or ability to pay. Instead, the burden would be determined by energy use patterns and circumstances, such as distance from work, condition and energy efficiency of homes, automobiles, and appliances.

Senior citizens on fixed incomes would find energy costs escalating and their income dwindling.

Will the policies actually stop global warming?

By all estimates, only severe reductions in global carbon dioxide emissions, on the order of 60 per cent or more, will alter the computer forecast. The resulting economic dislocations would be tremendous, potentially out weighing the negative impacts of even the most apocalyptic warming scenario.

Participatory polder management

MD. SAEEDUR RAHMAN

THE country's coastal land has roughly been delineated as 42,000 square kilometres with a population of approximately 33 million. Over the last four decades the network of modern coastal embankment with 123 complete polders has been developed primarily to benefit agriculture and subsequently to enhance degree of safety to life and property. The 5,000km embankment, 2,500 hydraulic structures, 6,000km drainage channel and 1,845 cyclone shelters provide protection to agriculture and life and property over approximately 1,400,000 hectares.

The coastal community is snaked by the hydro-morphological inputs such as river discharges, astronomical tides, storm waves and infrequent extreme events. The surface runoff is also not beyond that contribution. The lower Meghna river only conveys the combined flow of the Ganges, the Brahmaputra and the Meghna. The system discharge varies from 10,000 cubic metres per second in the dry season to more than 100,000 cubic metres per second in the wet season. Such discharge is the third highest of all river systems in the world. The annual sediment discharge is the highest in the world, ranging between 0.5 billion and 1.8 billion tonnes. The tide along the coast is semidiurnal in the range of less than two to nearly six metres. The maximum current velocities vary from approximately 0.1 to four metres per second. Under the prevailing south-southeast winds with an average speed of about eight metres per second, the average significant wave height ranges from 0.6-1.5m near shore to 0.1-0.6m in the landward zone of the coast. During monsoon wave heights can exceed 2m with periods greater than six seconds. Higher waves occur mainly during cyclones. About one-sixth of the tropical storms generated in the Bay of Bengal hit the coast. Cyclones occur at a frequency of 1.3 per year. Severe cyclones generate wind speeds of more than 150 km/hour and surges that are 9m above the astronomical tide. The average annual rainfall in the country is 2,200mm.

The polder management consists of two principal aspects: operation and maintenance with an institutional arrangement for community participation. The sustainable management of coastal polders emphasise on securing and improving the quality of coastal population conserving the environmental heritage and coastal resources for future generations by developing economically viable solutions to reduce resources consumption, stop pollution and conserve natural habitats. But sustainability has always been destabilised by its dynamic concomitant parameters. Operation has informally been taken over by the community except for vital installations. Infrastructures providing benefits to the polder population have been with the local-level informal community groups comprising of the rural elite.

Currently, attention to management by community of coastal polders, in general, and to preventive and periodic maintenance, in particular, is inadequate. Constraints on attaining an acceptable level of polder management are mainly due to shortage of finance and organisational staffing and institutional shortcomings. Causes that had been identified in previous studies and reports (Kamsax, 1993) are institutional constraints, lack of proper management plans and inadequate budget. The community-based preventive and periodic maintenance in the management plans is yet to be integrated. Annual Development Plans do not show prioritisation of maintenance works. The role of communities is not taken into account. Sustainable management of coastal polders, irrespective of its approach and methodology, is instrumental to the appropriate tools for its implementation. Efforts for involvement of community in management of coastal polders are not new. Several earlier water sector projects exercised to organise indulgence of coastal community in planning, design, implementation and monitoring of the polders. Based on practices in and experiences from these coastal projects, the current Coastal Embankment Rehabilitation Project (CERP) has involved the coastal community in polder management. The participation approach to afforestation and embankment maintenance has been adopted in order to maximise the benefits of the project for local disadvantaged groups and in order to provide long term low cost management of coastal polders. The approach included the engagement of NGOs who assisted in training and supervising landless people in management, construction and afforestation activities.

Community groups carry out routine operation and management and planting management of vegetation on the embankments with priority given to those affected by the toe of the embankment and have been responsible for the maintenance of a specific strip corresponding to the length of embankment on which they would have the usufructuary rights for the vegetation.

Supervised by the non-governmental organisation, local people carry out afforestation on the foreshore. Mangroves are being planted on low-lying foreshore areas. The groups have an average of about 15 members. Replacement of failed seedlings would be carried out in the subsequent years. For the publicly owned areas to be afforested protection of foreshore forests would be the responsibility of the community. Distribution of benefits from harvests, carried out from year eighth onwards, under the supervision of the implementing agency, would be the responsibility of the community.

Resettled households carry out embankment afforestation. A combination of timber, fuel wood, fruit and other species, such as grasses, are provided on gratis to families from nurseries established in collaboration with the NGOs. Such families would also be supplied with fertiliser and pesticides during the first three years of afforestation.

Periodic embankment maintenance consists of earthwork in resectioning to bring the embankment to design profile, repairs of earth slips, vegetating of slopes, etc. The periodic maintenance programme ensures the safety and security of the embankment. In addition, where conditions permit, funds from the periodic maintenance programme are utilised to carry out routine maintenance.

The institutional framework in which the local community participates for water management is the water management organisation comprising the water management group, the water management association and the water management federation (WMF). This is the institutional mechanism at various levels of the local community for participatory water management. The water management bodies representing the community is the driving force in water resource management. They have decision-making power at all stages of local water resource management that concern them. The water management organisations are responsible for planning, implementing, operating and maintaining local water resources schemes in a sustainable way.

Re-settled households have individual contracts with provisions of erecting homestead plot on the slope/toe of the embankment and usurfructary rights of the plantation on the embankment they do. Settlers receive a cash payment for relocation expenses and payment in kind of materials for building homestead on the embankment.

Squatters on the embankment have been mobilised to form groups to protect embankment under a contract with the implementing agency similar to that of embankment settlers with responsibility of vegetating the embankment slopes for which monthly subsistence allowances are paid at a declining rate for four years; beyond which 100 per cent benefits of forestry harvests to be availed by the groups to support their subsistence.

Groups consisting of landless and disadvantaged section are motivated and mobilised to raise forestry in the publicly owned foreshore. Wages are paid for planting and maintaining of the mangrove forestry under contracts with the implementing agency valid until termination. Replanting in case of damages by reasons other than extreme hydrological events shall be done at group's own cost. Group is entitled to benefit 100 per cent from the forestry harvests without having the ownership of the lands.

Foreshore landowners have been formed for forestry in the privately owned foreshore. The terms and conditions are similar to those of the foreshore forestry group with the exception that they are the owners of their lands.

Groups have direct contracts with the IA for sections of embankments (limited to sections unimpeded by human settlement and plantations) where no rehabilitation and improvement works have been carried out. Preference for membership to these groups has been given to landless households, and particularly female headed households, living close to the embankment. The earthwork maintenance groups typically have about 10 members with an elected chairperson and secretary.

The landless contracting societies have been established by the NGOs in order to carry out foreshore afforestation, some earthworks during resectioning and appropriate periodic maintenance work. Landless Contracting Societies are registered by the NGOs who would assist in the process for contracting with the implementing agencies. Since the groups do not have their own legal entity, NGOs assist landless contracting societies, to register formally under the Society's Act in order to ensure sustainability after expiry of the project.

The community development fund of the project provides resources to implement activities towards supporting the poverty reduction programme, which aims at strengthening polder management and community cohesion. The supports include water supply and sanitary facilities for the embankment settlers, training and education programmes for the community members at large and income generating activities for the immediate group members.

Institutional weakness of the community in terms of its legal strength is a 'pain in the neck' for establishing rights while trespassed by others. Inter-institutional coordination between the implementing agency and NGOs are inadequate that intercepts community participation. Implementing agency's organisational culture is a mismatch to the involvement of community in management of polders. The mode of financing subsistence to community is hinged with national level funding mechanism incompatible to community needs and as such a stone in the shoe. Pursuing further the lessons learned by the implementing agency is uncertain and as such may culminate in loss of progress made. The potential adverse impacts of inadequate community involvement would be lowering benefits and raising both management and investment costs. If the polder infrastructures are not maintained properly and there is intrusion of saline water, then agricultural benefits would fall, the life of infrastructures would be shorter and benefits therefrom would be less.

Community is peer to a sustainable management of coastal polders. In return it benefits them by reducing poverty with the facilities of settlement, opportunities of works and forestry harvests. The community's involvement in water resources contributes towards increasing agricultural production, resolution of potential conflicts, and generates economic growth that eventually adds to supporting the poverty reduction strategy and management of polders.

Involvement of community is the most important anchor that strongly supports and firmly holds the coastal engineering interventions while the sociopolitical will and commitment plays the key role of a guy. Premature suspension of survival needs may purge the awareness grown in the community with eventual disappearance of the advances made towards involvement of the community in management of coastal polders. A legal coverage to contracting between the implementing agency and the community-based groups is essential for shielding its right. It will be providential while the portion of community involvement in place shall be institutionally integrated with coastal waters designed to deflate poverty.

Md Saeedur Rahman is Project Director, Coastal Embankment Rehabilitation Project, BWDB.